

Claims:

1. A method for recognizing an utterance that pertains to a sparse domain, the sparse domain having a linguistic structure and a plurality of components, objects or concepts, the method comprising the steps of:

acquiring a speech signal that represents an utterance;

performing a first recognition pass by applying a first language model to the speech signal;

selecting or generating a second language model based at least in part on results from the first recognition pass, on information regarding a linguistic structure of a domain within the speech signal, and on information regarding relationships among the domain components, objects or concepts within the speech signal; and

performing a second recognition pass by applying the second language model to at least a portion of the speech signal to recognize the utterance containing the speech signal.

2. The method of claim 1 wherein the first and second language models are probabilistic finite state grammars.

3. The method of claim 1 wherein the first and second language models are statistical language models.

4. The method of claim 1 further comprising the step of selecting or generating acoustic models based at least in part on results from the first recognition pass, on information regarding the linguistic structure of the domain, and on information regarding relationships among the domain components, objects or concepts.

5. A method for recognizing an utterance pertaining to an address or location, each address or location having a plurality of components, the method comprising the steps of:

acquiring a speech signal that represents an utterance;

performing a first recognition pass by applying a first language model to the speech signal;

selecting or generating a second language model based at least in part on results from the first recognition pass and on information regarding relationships among the address or location components; and

performing a second recognition pass by applying the second language model to at least a portion of the speech signal to recognize the utterance contained in the speech signal.

6. The method of claim 5 further comprising the step of selecting or generating acoustic models, the selection or generation based at least in part on results from the first recognition pass and on information regarding relationships among the address or location components.

7. In a speech recognition system, a method for recognizing an utterance comprising the steps of:

acquiring a speech signal that represents the utterance; and

performing a series of recognition passes, a second and subsequent recognition passes processing at least a portion of the speech signal using a language model that is constrained by a result of a previous recognition pass.

8. The method of claim 7 wherein the second and subsequent recognition passes use acoustic models that are constrained by a result of a previous recognition pass.

9. A method for generating language models between speech recognition passes, the language models based on a domain having a linguistic structure and a plurality of components, objects or concepts, the method comprising the steps of:

generating or acquiring a database containing information regarding the linguistic structure of the domain and information regarding relationships among the domain components, objects or concepts;

acquiring a result from a speech recognition pass, the result including a domain component, object or concept; and

generating a language model that includes a subset of the domain by using the result from the speech recognition pass to select information from the database.

10. In a speech recognition system, a method for generating language models based on a domain having a plurality of components, objects or concepts, the method comprising the steps of:

acquiring a result from a speech recognition pass, the result including a domain component, object or concept;

using the result from the speech recognition pass to perform a search on a database that contains information regarding relationships among the domain components, objects or concepts; and

generating a language model using a result from the database search.

11. A method for recognizing an address or location expressed as a single utterance, the method comprising the steps of:

acquiring a speech signal that represents the single utterance; and

performing a series of recognition passes, a second and subsequent recognition passes processing at least a portion of the speech signal using a language model that is constrained by a result of a previous recognition pass.

12. The method of claim 11 wherein each address or location has a plurality of components.

13. The method of claim 12 wherein the first recognition pass processes the speech signal using a first language model.

14. The method of claim 13 wherein the first language model may be used to recognize only a subset of the address or location components.

15. The method of claim 14 wherein the language models used in the second and subsequent recognition passes may be used to recognize only a subset of the address or location components.

16. The method of claim 15 wherein the second and subsequent language models are selected or generated by using the result from a previous recognition pass to perform a search on a database that contains information regarding relationships among the address or location components.

17. The method of claim 11 wherein the second and subsequent recognition passes uses acoustic models that are constrained by a result of a previous recognition pass.